Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

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Public Comments

No public comments were received for this proposal.

Technical Synthesis Panel Review

Proposal Title

#0287: Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

Final Panel Rating
inadequate

Technical Synthesis Panel (Primary) Review

TSP Primary Reviewer's Evaluation Summary And Rating:

The objectives of this project are to estimate waterbird (primarily waterfowl and shorebirds) abundance relationships with wetland status (tidal or managed), evaluate the importance of tidal and diked wetland habitats to waterfowl, and develop a model to understand waterbird abundance and distribution. The authors justify this project under the guise that proposed restoration activities will reduce waterbird habitat availability. Overall, this is more of a descriptive project that could provide valuable baseline information on waterbird distribution in the Suisan Marsh, which could potentially improve management for waterbirds. The conceptual model for the proposed investigation is not developed well or integrated with any scientific hypotheses for their work. To address their objectives, the authors propose waterbird surveys, radio-tracking Northern Pintails (Anas acuta) and Mallards (Anas platyrhynchos), and a spatially explicit predictive model. The waterbird surveys use well-established protocols, but it is unclear how the data will be analyzed and what the GIS database will specifically provide. The investigators mention that they will evaluate different management regimes for wetlands, but do not describe or identify those regimes. The investigators also do not mention collecting any habitat-based data to explain bird distributions and movements. The description of radio-tracking

provides little detail, and most reviewers were concerned about the design. It is not well justified why two closely-related species were chosen and why only 25 radios will be deployed. Furthermore, there is no mention of how the radios will be deployed (e.g. Will radios be deployed randomly in different management units?). The proposal lacks description of how the data will be processed and analyzed, particularly the temporal variation in locations (i.e., diurnal versus nocturnal locations). Arguably, the most important deliverable in this proposal is the predictive modeling; however, there is almost no detail on the type of modeling approach that will be used, how the data collected will be incorporated into the model, nor how the model will be used to assess tidal marsh restoration impacts. As one reviewer notes, "Given that predictive models are one of the major products of this study, this lack of detail is surprising. Besides the lack of detail on the modeling approach, the authors also neglect to describe the existing water management schemes that will be assessed and provide no scenarios regarding how much of Suisun Marsh is likely to be converted to tidal marsh habitats." Without this information, it is not possible to interpret what the products of this proposed work will be, how accurate results will be, and how useful products will be for management. This project is generally straightforward and feasible (other than the modeling), the budget is adequate, and the authors have strong capabilities for conducting the work. The goals and objectives of this project are timely and important, although on a local scale. Furthermore, this project does not appear to directly assess impacts of different marsh-water-bird management techniques. The authors hope to be able to predict impacts of restoration practices in the Suisan Marsh on waterbird distributions. While waterbirds are important ecological components of the marsh environment, it is not clear how this proposal will enhance our general understanding of this and other systems, and it does not appear to directly address any of CALFED's top priorities.

Additional Comments:

The objectives of this project are to estimate waterbird (primarily waterfowl and shorebirds) abundance relationships with wetland status (tidal or managed), evaluate the importance of tidal and diked wetland habitats to waterfowl, and develop a model to understand waterbird abundance and distribution. The authors justify this project under the guise that proposed restoration activities will reduce waterbird habitat availability. Overall, this is more of a descriptive project that could provide valuable baseline information on waterbird distribution in the Suisan Marsh, which could potentially improve management for waterbirds. The conceptual model for the proposed investigation is not developed well or integrated with any scientific hypotheses for their work. To address their objectives, the authors propose waterbird surveys, radio−tracking Northern Pintails (Anas acuta) and Mallards (Anas platyrhynchos), and a spatially explicit predictive model. The waterbird surveys use well−established protocols, but it is unclear how the data will be analyzed and what the GIS database will specifically provide. The investigators mention that they will evaluate different management regimes for wetlands, but do not describe or identify those regimes. The investigators also do not mention collecting any habitat−based data to explain bird distributions and movements. The description of radio−tracking provides little detail, and most reviewers were concerned about the design. It is not well justified why two closely−related species were chosen and why only 25 radios will be deployed. Furthermore, there is no mention of how the radios will be deployed (e.g. Will radios be deployed randomly in different management units?). The proposal lacks description of how the data will be processed and analyzed, particularly the temporal variation in locations (i.e., diurnal versus nocturnal locations). Arguably, the most important deliverable in this proposal is the predictive modeling; however, there is almost no detail on the type of modeling approach that will be used, how the data collected will be incorporated into the model, nor how the model will be used to assess tidal marsh restoration impacts. As one

reviewer notes, “Given that predictive models are one of the major products of this study, this lack of detail is surprising. Besides the lack of detail on the modeling approach, the authors also neglect to describe the existing water management schemes that will be assessed and provide no scenarios regarding how much of Suisun Marsh is likely to be converted to tidal marsh habitats.” Without this information, it is not possible to interpret what the products of this proposed work will be, how accurate results will be, and how useful products will be for management. This project is generally straightforward and feasible (other than the modeling), the budget is adequate, and the authors have strong capabilities for conducting the work. The goals and objectives of this project are timely and important, although on a local scale. Furthermore, this project does not appear to directly assess impacts of different marsh–water–bird management techniques. The authors hope to be able to predict impacts of restoration practices in the Suisan Marsh on waterbird distributions. While waterbirds are important ecological components of the marsh environment, it is not clear how this proposal will enhance our general understanding of this and other systems, and it does not appear to directly address any of CALFED’s top priorities.

Technical Synthesis Panel (Discussion) Review

TSP Observations, Findings And Recommendations:

Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

Principal and secondary reviewers rated the proposal as inadequate. The panel felt the project design was inadequate. The premise of the proposal is that restoration will decrease habitat quality. This is primarily a descriptive project on habitat associations. No conceptual model was provided, nor were there any guiding hypotheses in the proposal. The surveys proposed use established protocols but the applicants are unclear on how the data obtained will be analyzed. A model is proposed but it is not adequately described. Existing management regimes are not identified. There was no model

described or proposed to explain waterbird movements. Panel felt the radio tracking sample size would likely be insufficient for objectives.

Final Ranking: Inadequate.

Technical Review #1

proposal title: Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	**The objectives and hypotheses were more difficult to assimilate than were those of other CALFED proposals that I have reviewed. The objective is estimate the effect that different water use policies have and will have on waterbirds. The field data collection seems straightforward enough: the locations of waterbirds will be determined and associated with habitat type. This may shed light on the current habitat use of waterbirds, but in the absence of experimental manipulation of water use, it seems too optimistic to me to think that the proposed work will help much to predict the effect of changes in habitat management.**
Rating	**good**

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full−scale implementation project justified?

Comments	**The justification presented in the proposal casts the proposed work as integral to the CALFED Science Program goals. Tidal marsh**

	restoration may well affect waterbirds. However, if tidal marsh restoration will proceed in any case, then we will eventually find out what the effect is on waterbirds without this study being done. The conceptual model seemed simplistic to me.
Rating	**fair**

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	**The field work described does seem likely to produce the desired data, with the following provisos. The method of attachment of the radio transmitters on the birds was not described, so it may be optimistic to think that they will stay on the animal for 180 days (the implied duration of the tracking). The sample size, 50 ducks in total, seemed surprisingly small to me.**
Rating	**good**

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	**Given the sample size limitation, and assuming that the transmitters will stay attached, it appears that the investigators will have a good idea of the nocturnal habitat use of a relatively small number of ducks. The scale of the project seems too small to me to give a robust evaluation of habitat use. The modelling was described in a cursory fashion that made**

	evaluation difficult.
Rating	fair

Monitoring

If applicable, is monitoring appropriately designed (pre−post comparisons; treatment−control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	Little information was provided on expected products.
Rating	fair

Additional Comments

Comments

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The team appears to be capable of executing the work as described.
Rating	excellent

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	**The budget seems quite high for conventional radio-tracking of 50 ducks for up to 6 months, with subsequent data analysis.**
Rating	**fair**

Overall

Provide a brief explanation of your summary rating.

Comments	**Compared to other CALFED proposals that I have seen, this one is not presented well, and seems to ask for more funding than is required to carry out the limited objectives described.**
Rating	**fair**

Technical Review #2

proposal title: Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	**The goals, objectives, and hypotheses of this project are timely and important. The applicants hope to be able to anticipate the impacts of tidal marsh restoration in Suisun Marsh on waterfowl and wading bird abundance and distribution within the marsh. Waterfowl and wading birds are important ecological components of the Marsh environment. Understanding how these components will be impacted by tidal marsh restoration will be valuable.** **This study seeks only to document the distribution of waterbirds with respect to different Marsh−water management approaches; but will not provide anything close to a comprehensive view of the impacts of different marsh−water−bird management techniques. The objectives of this proposal are rather narrowly defined. For example, assesing the impacts of waterbird management on water quality issues within Suisun Marsh is a major, pressing need that this study will not attempt to explore.**
Rating	**good**

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full−scale implementation project justified?

Comments	**The applicants provide extremely little background on the impacts of tidal marsh restoration on wading birds and waterfowl. It is difficult to believe that there is NO literature on this topic.** **The authors clearly state that, in the face of this apparent dearth of knowledge, they wish to document the patter of waterfowl and shorebird distribution and abundance with respect to different Marsh-water managemenet techniques. If this information is really unkown, the authors are right to suggest that the information should be collected. Unfortunately, they do not identify proposed next steps for this research.**
Rating	**fair**

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	**The approach is very descriptive. The applicants hope to document the abundance and distribution patterns of waterbirds with respect to different Marsh-water management techniques. This description alone will say very little about the actual impact of these water-marsh management strategies on waterbird abundance, distribution, reproductive success, and persistence. There is no sense of a statistical comparison and no mention about how issues of spatial autocorrelation (and temporal autocorrelation as climatic condition of certain years may impact how waterfowl aggregate) will be addressed. As a result, knowing where the birds are (or monitoring the movements of ducks, as in task 2) will tell you very little about WHY they are found where they are and how that impacts their life-history. There is no effort made to link differences in waterfowl distribution/abundance to the MECHANISMS that might**

	produce these differences. **The applciants have chosen to radio-tag 50 ducks to monitor their movements and determine how they use their habitat at night and during the day. This information will be interesting but, I don't buy the applicants assertion that two Anas spp. can be used to understand the movement patterns of all duck species in the marsh. At the least, the authors should have chosen to more distantly-related species for this part of the study. Also, there was no discussion of whether the 25 ducks per species would be from different flocks or not -- if the birds are in the same flight group, their movements are not statistically independent of each other. I recommend tagging 10 representatives of each of the different waterfowl species of interest (preferabbly 5 male and five females) from DIFFERENT flocks. This would provide much more detailed and valuable information about waterfowl use fo the marsh than the present proposed tagging operation.**
Rating	**poor**

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	**The applicants are fully capable of performing this study. The question is: can't we learn more about Marsh-water management on the distribution, abundance, and life-history of waterbirds in Suisun Marsh thatn these applicants propose?**
Rating	**very good**

Monitoring

If applicable, is monitoring appropriately designed (pre−post comparisons; treatment−control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	**This study proposes to monintor waterbirds in Suisun marsh. There are no pre−post comparisons. There are no treatments (unless different Marsh−water management strategies are considered treatments) and there is no control The authors seem to think that unmodified sections of the Marsh count as a control. However, there is no discussion of the appropriate scale for "control landscapes" for waterfowl within this marsh. I doubt that waterfowl and wading bird use of unmodified sections of this marsh is independent of their use of other sections of the marsh. Therefore, unmodified sections of Marsh are not "controls" for the land management "treatments".**
Rating	**fair**

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	**It will be valuable to know where waterbirds aggregate in Suisun Marsh. Managers will need to understand these distribution patterns in order to plan tidal marsh restoration activities. The authors intend to produce a map and present their results at conferences. The products won't be that useful for measuring the impacts of different water management strategies within the marsh because "correlation is not causation".**
Rating	**good**

Additional Comments

Comments	**The authors could attempt to integrate their study into a future study on the impact of staged restorations. For example, the authors could document waterbird distribution, feeding, and life-history attributes in areas of Suisun slated for restoration and areas that are not slated for restoration (or at least not to be restored at the same time as the first group). Results from a detailed, spatially explicit study of this sort could be used as a baseline for measuring impacts of future restoration actions. It would be particularly useful if the authors found control sites outside of the marsh, but within the Central Valley where they could measure the life history characeristics of the same species.** **This is not the plan of the current study. It is unlikely that the current study (which will measure only dist. and abundance throughout the entire marsh and nocturnal movements of only two duck species) will produce an adequate baseline for measuring the impact of future restoration activities.**

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	**The authors are highly qualified to conduct this project. They regularly publish in management journals and present their results at regional management meetings.**
Rating	**excellent**

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	**The budget is fair given what the applicants are trying to accomplish. But, they could also accomplish much more with the same materials and labor.**
Rating	**very good**

Overall

Provide a brief explanation of your summary rating.

Comments	**The applicants propose to study abundance and distribution of waterbirds in Suisun Marsh. It is undoubtedly important to udnerstand habitat use patterns of these birds in Suisun Marsh, particularly if changes in Marsh hydrology are planned as part of "restoration" activities. The applicants could use their conceptual model to produce testable hypotheses that would lead to the collection of far more interesting data. As is, the proposal is too focussed on simply documenting patterns of abundance and distribution and relies too heavily on two closely-related waterbird species to reveal patterns of habitat use among ducks in the marsh.** **The authros should more explicitly address marsh-water-waterfowl management strategies including the impacts of these strategies on water quality as well as their ability to produce more waterbirds.**
Rating	**fair**

Technical Review #3

proposal title: Evaluation of waterbird response to tidal and managed wetlands in Suisun Marsh

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	**The overall goal of this study is to evaluate the effects of current management and proposed conversion of managed to tidal marsh on waterbird distribution and abundance in the Suisun Marsh. A major focus is determining statistical relationships between waterbird distribution and water management regimes. These relationships will then be used to (a) project the impact of conversion to tidal marsh on waterbird abundance/distribution and (b) to mitigate the hypothesized negative effects of this conversion by improving management on the remaining managed marsh. These goals are relatively clearly stated and consistent. Overall, this is a descriptive project, rather than hypothesis-testing science, unless the hypothesis is that some management regime can mitigate losses of habitat from conversion to tidal marsh. Although rather local in scope, this is a relevant topic for the CALFED program, since Suisun Marsh makes up 10% of California's remaining natural wetlands and is targeted for at least partial restoration to tidal wetland habitats.**
Rating	**good**

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection

of research, pilot or demonstration project, or a full−scale implementation project justified?

Comments	**The authors argue that the study is justified based on (a) CALFED's proposed conversion of parts of Suisun Marsh from managed to tidal marsh and (b) the lack of existing knowledge about how waterbirds respond to the different management regimes in the marsh. The overall conceptual model appears to be that managed marsh provides better habitat for wintering waterbirds than would restored tidal marsh, and that proper management of the remaining managed marsh habitat may mitigate habitat losses due to tidal marsh restoration. The authors cite a 1999 report by the Shorebird and Waterfowl Focus Team to support these assertions. This conceptual model provides the basis for the study and justifies selection as a research project.**
Rating	**good**

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	**Methods for quantifying waterbird numbers and habitat usage seem relatively well designed, but information on how these data will be combined into a set of models is lacking. The authors seem to be well−versed in techniques for monitoring waterbird abundance and distribution. However, there is almost no detail on what kind of modeling approach will be used, nor on how the data and model developed in this project will be used to assess tidal marsh restoration impacts. Given that predictive models are one of the major products of this study, this lack of detail is surprising.** **Although there is nothing particularly novel in this approach, the assessment of habitat use by wintering**

	waterbirds and the effects of marsh management could add to the base of knowledge for managing waterbird populations in the Bay. Without an adequate description of the modeling and how the models will be used, it is difficult to assess how useful the information gained from this project will be for decision makers.
Rating	fair

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	I think the work is feasible, but (as I indicate above) almost no information is given on how models will be developed and used. Without a clear focus on the modeling outcome, it is possible that this project could end up as merely a data collection exercise. The monitoring approaches are well-documented and feasible and seem to be well within the grasp of the authors. Constructing predictive models from these data is probably feasible, but is impossible to evaluate without documentation of the modeling approach. This project has plenty of detail on monitoring, but too little on the most important products of the proposed research - the predictive models of habitat usage and the assessment of restoration impacts.
Rating	fair

Monitoring

If applicable, is monitoring appropriately designed (pre-post comparisons; treatment-control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	**The monitoring here is pre-project monitoring to determine waterbird habitat usage. These data will be used to develop predictive models for the impacts of conversion to tidal marsh and to determine optimal water management schemes for waterbird usage on the remaining managed marsh. The monitoring methods seem appropriately designed for developing these statistical relationships. The monitoring approach is really a kind of space-for-time substitution, in that the authors assume that habitat usage patterns now (i.e., preference for specific marsh types and water management regimes) will also apply when portions of the marsh are converted to tidal marsh. Actually, it would be very interesting if this project was designed to track changes in waterbird habitat use before, during, and after tidal marsh restoration. I believe that this would be a more important contribution.**
Rating	**good**

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	**I have doubts as to whether products of value will come out of this work. The data on waterbird abundance and habitat usage could be useful, but are without context if adequate models are not developed. The project and its products are also quite narrowly focused on Suisun Marsh. Products proposed by the authors include presentations at CALFED symposiums and other forums, archived data, contributions to the BIOS database, and reports available online to the public and other agencies. As I indicate above, this proposal provides too little detail on model development, habitat conversion scenarios, and existing management approaches for me to assess whether products of value will arise from the project.**
Rating	

	fair

Additional Comments

Comments	**Besides the lack of detail on the modeling approach, the authors also neglect to describe the existing water management schemes that will be assessed and provide no scenarios regarding how much of Suisun Marsh is likely to be converted to tidal marsh habitats. The proposal is very short and lacks detail, in general, of how the waterbird distribution and abundance data will be used to develop models and project impacts of conversion to tidal marsh.**

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	**The authors have a high degree of expertise on waterfowl biology and the use of telemetry and other methods to monitor bird movements and habitat usage. Between them, the authors have many peer−reviewed publications and extensive experience managing and studying waterfowl populations. It is unclear, however, whether any of the authors have a strong background in statistical modeling of bird−habitat relationships (although a couple of the authored papers do deal with habitat preference). It is also unclear from the task form and the budget description which team member(s) will do the bulk of the modeling. I would assume that this work would be the primary task of one of the team members. Infrastructure and equipment for performing the monitoring appears adequate, but it is not clear whether the authors have the expertise to effectively develop and apply the predictive models that are to be the main products of this project.**

Rating	**fair**

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	**The budget seems reasonable and adequate for the work proposed. However, approximately 60% ($190 K) of the total budget will go toward monitoring nocturnal habitat use by mallards and pintails. Given that the authors have never clearly shown how these data will be used, it is difficult to justify this level of expenditure to monitor these two continentally common species.**
Rating	**good**

Overall

Provide a brief explanation of your summary rating.

Comments	**I believe that this could be a good project, notwithstanding it's solely local focus. The biggest problem, however, is that the main product of the entire proposal – the development of predictive habitat usage models – is very poorly documented. It isn't at all clear what the authors are going to do with all of the data they collect. There isn't even a description of the modeling approach to be employed, nor of how it will be used to assess the impacts of tidal marsh restoration on waterbirds. This is a rather baffling oversight on the part of the authors. I cannot recommend this proposal without a rewrite by the authors that adequately documents how the models will be developed and used to address the original objectives of the study.**
Rating	**fair**